



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**10.01.2007 Bulletin 2007/02**

(51) Int Cl.:  
**A61B 17/072** (2006.01) **A61B 17/115** (2006.01)  
**A61B 17/068** (2006.01) **A61B 18/14** (2006.01)  
**A61B 17/128** (2006.01)

(43) Date of publication A2:  
**06.12.2006 Bulletin 2006/49**

(21) Application number: **06011501.1**

(22) Date of filing: **02.06.2006**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA HR MK YU**

(71) Applicant: **Tyco Healthcare Group LP**  
**Norwalk, Connecticut 06856 (US)**

(72) Inventor: **Beetel, Robert J.**  
**Hamden, CT (US)**

(74) Representative: **HOFFMANN EITLE**  
**Patent- und Rechtsanwälte**  
**Arabellastrasse 4**  
**81925 München (DE)**

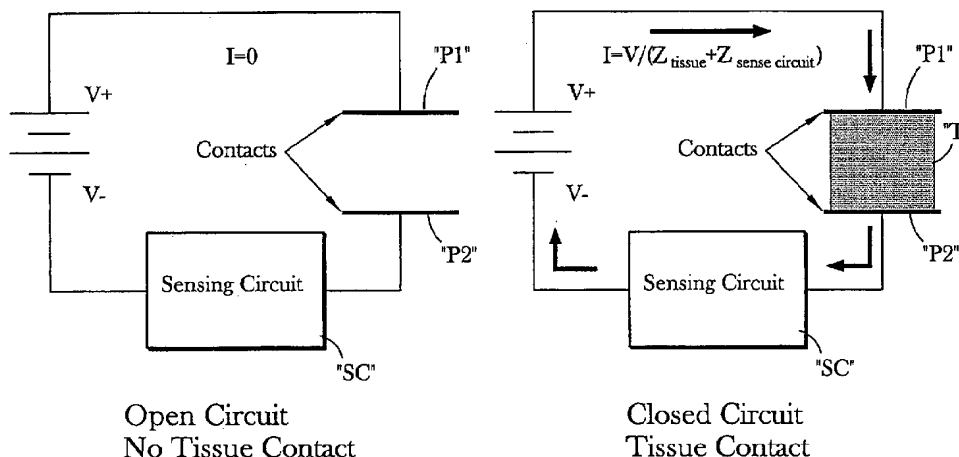
(30) Priority: **03.06.2005 US 687243 P**  
**03.06.2005 US 687214 P**

(54) **Surgical instruments employing sensors**

(57) According to an aspect of the present disclosure, a surgical instrument (10,100,200,300) for operating on tissue is provided. The surgical instrument includes an end effector including a first tissue engaging member (20) and a second tissue engaging member (22) juxtaposed relation to the first tissue engaging member; a gap determination element (60,62) operatively associated with each of the first tissue engaging member and the second

tissue engaging member for measuring a gap distance between the first tissue engaging member and the second tissue engaging member; and a tissue contact determining element (60,62) operatively associated with a respective tissue contacting surface of at least one of the first tissue engaging member and the second tissue engaging member. The present disclosure also relates to methods of using the surgical instrument.

**Tissue Contact Circuit**



**FIG. 20**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 06 01 1501

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 03/090630 A (TYCO HEALTHCARE GROUP, LP; HEINRICH, RUSSELL; CUNY, DOUGLAS, J) 6 November 2003 (2003-11-06) * page 3, lines 16-21.32-34 - page 4, columns 1-4,22,3, lines 30-34; figures 1,2,4 * * page 10, lines 26-34 - page 11 * * page 12, lines 15-27 - page 18, lines 14-18 * * page 23, lines 12,16-25 * -----	1-18	INV. A61B17/072 A61B17/115 A61B17/068 A61B18/14 A61B17/128
X	EP 0 552 050 A (ETHICON INC) 21 July 1993 (1993-07-21) * column 2, lines 45-49 - column 4, lines 47-52; figures 2,17,20a * * column 6, lines 45-54 - column 9, lines 16-24,45-58 * -----	1-12	
X	WO 03/020139 A (VLEUGELS, MICHEL, PETRONELLA, HUBERTUS; LAZEROMS, MARKUS, CORNELIS, JA) 13 March 2003 (2003-03-13) * page 8, lines 13,14 - page 10, line 28; figure 1 * -----	1,2,4-11	TECHNICAL FIELDS SEARCHED (IPC) A61B
X	US 2004/153124 A1 (WHITMAN MICHAEL P) 5 August 2004 (2004-08-05) * paragraphs [0048], [0056]; figures 3,4 * -----	1-10,12	
A	US 5 464 144 A (GUY ET AL) 7 November 1995 (1995-11-07) * column 6, line 62 - column 7, line 12; figures 1,2 * -----	1,5,6	
A	US 6 221 023 B1 (MATSUBA TOMOYOSHI ET AL) 24 April 2001 (2001-04-24) * abstract; figures 1,3a * -----	18	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 September 2006	Examiner Assion, Jean-Charles
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

2  
EPO FORM 1503 03.02 (PC/CO1)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 06 01 1501

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-09-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 03090630	A	06-11-2003	AU 2003245246 A1	10-11-2003
			CA 2483094 A1	06-11-2003
			EP 1496805 A2	19-01-2005
			JP 2005523105 T	04-08-2005
-----				
EP 0552050	A	21-07-1993	AT 192639 T	15-05-2000
			AU 670051 B2	04-07-1996
			AU 3117893 A	22-07-1993
			CA 2087221 A1	18-07-1993
			DE 69328576 D1	15-06-2000
			DE 69328576 T2	04-01-2001
			DK 552050 T3	07-08-2000
			ES 2146216 T3	01-08-2000
			GR 1001562 B	29-04-1994
			JP 6007357 A	18-01-1994
			PT 552050 T	31-08-2000
-----				
WO 03020139	A	13-03-2003	EP 1423056 A2	02-06-2004
			NL 1018874 C2	05-03-2003
			US 2005021078 A1	27-01-2005
-----				
US 2004153124	A1	05-08-2004	NONE	
-----				
US 5464144	A	07-11-1995	CA 2129478 A1	20-02-1995
			EP 0639349 A2	22-02-1995
			US 5503320 A	02-04-1996
			US 5497934 A	12-03-1996
-----				
US 6221023	B1	24-04-2001	JP 9149941 A	10-06-1997
-----				

EPO FORM P4459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82